

65461

Work Order ID 57059

March 18, 2010 1:03:53 PM



Page 1

Item ID: D212-725-1-901

Accept



Setup Start



Revision ID:

Stop



Item Name: COLLECTIVE BELL CRANK ASSEMBLY

Start Date: 3/19/10 Start Qty: 22.00



Cust Item ID:

Required Date: 3/31/10 Req'd Qty: 22.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D212-725-1

Rev B

100

0.00



Small Fab

PTO.

Memo

0.00

Small Fab

1- Install sleeve and bearing as per dwg
2- Stake bearing as per dwg

AD 10/11/23

110

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

120

Spray Painting per QSI005 4.2

0.00



SprayPaint

Memo

0.00

Spray Painting

Mask bearing prior to prime and paint
1- Prime and paint as per dwg

10/10-11-23

10 Manual Mill.

Mill Chamber as per Day.

20 QCT

30 Manual Lathe.

P/N 120-015 5A
P/N 120-013 3A

M113 699
M113 699

10/11/23

(8)
(8)

Turn Sleeves AS per Step #2 on Ring: Stacking Procedures.

40 QCT

50 QCT

10/11/23

10/11/23

Work Order ID 57059

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Page 2

Item ID: D212-725-1-901

Accept



Setup Start



Revision ID:

Stop



Item Name: COLLECTIVE BELL CRANK ASSEMBLY

Start Date: 3/19/10 Start Qty: 22.00



Cust Item ID:

Required Date: 3/31/10 Req'd Qty: 22.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 QC Quality Control	QC14- Inspect Spray Paint Memo	0.00 0.00							
140 Packaging Packaging	Identify as per dwg & Stock Location: _____ Memo	0.00 0.00							
150 QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							

Closed on Initiative to
inventory & scrapped on
w/065401
W11.01.17

Picklist Print

March 18, 2010 1:03:51 PM

Page 1

Work Order ID: 57059

Parent Item: D212-725-1-901

Parent Item Name: COLLECTIVE BELL CRANK ASSEMBLY

Comments: IPP Rev:A now made in house DD 10.02.08 verified by:JLM

Start Date: 3/19/10

Required Date: 3/31/10

Start Qty: 22.00

Required Qty: 22.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

120-013-3A		Purchased	No			100	Each	40.0000	22.0000			
------------	--	-----------	----	--	--	-----	------	---------	---------	--	--	--



sleeve

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST381

40

113699

40

120-015-5A		Purchased	No			100	Each	40.0000	22.0000			
------------	--	-----------	----	--	--	-----	------	---------	---------	--	--	--



sleeve

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST381

40

113699

40

D212-725-1-007		Manufactured	No			100	Each	0.0000	22.0000			
----------------	--	--------------	----	--	--	-----	------	--------	---------	--	--	--



COLLECTIVE BELL CRANK

MS276433		Purchased	No			100	Each	40.0000	22.0000			
----------	--	-----------	----	--	--	-----	------	---------	---------	--	--	--



bearing

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

40

113673

40

Picklist Print

Page 2

March 18, 2010 1:03:52 PM

Work Order ID: 57059



Parent Item: D212-725-1-901



Parent Item Name: COLLECTIVE BELL CRANK ASSEMBLY



Start Date: 3/19/10

Required Date: 3/31/10

Comments: IPP Rev:A now made in house DD 10.02.08 verified by:JLM

Start Qty: 22.00

Required Qty: 22.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS276475		Purchased	No			100	Each	40.0000	22.0000			
												

bearing

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

40

113673

40

March 18, 2010 1:03:52 PM

Shop Packet Print

Page 2

L Lacelle

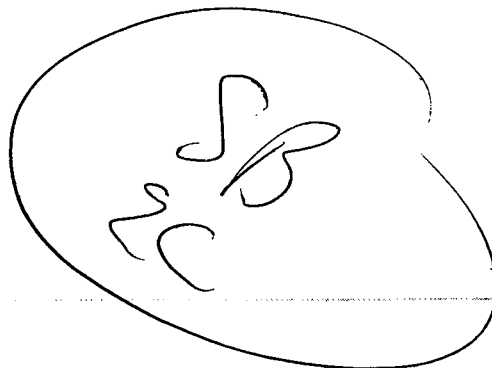
From: Jason Murdoch [jmurdoch@dartaero.com]
Sent: February 12, 2010 7:15 AM
To: 'L Lacelle'; mfauteux@dartaero.com
Cc: 'David Shepherd'; 'Bill Beckett'; 'Susanne Sheldon'; 'Mike Petsche'
Subject: FW: QC issues

Linda or Mel,

Please print the D212-725-1-901 w/o and add this e-mail to it. I have a copy of the procedure, and will just have to get it initialled per the e-mail. These would be considered a high priority more for replacements than stock. We will need at least 5 for the time being. BUT I think this process should be supervised by QC & engineering to ensure it goes smoothly.

Thanks,

Jason Murdoch
Quality Coordinator
 jmurdoch@dartaero.com
DART Aerospace Ltd.
613-632-5200



From: David Shepherd [mailto:dshepherd@dartaero.com]
Sent: February 11, 2010 10:05 PM
To: 'Jason Murdoch'
Cc: 'Harvey Siemens'; 'Roberto Fuentes'
Subject: RE: QC issues

Jason,

Sorry for the slow response.

Please go ahead using the instructions that Harvey prepared for installing and staking the bearings.

These should be incorporated into a QSI.

We plan to release the updated drawing next Friday.

David.

From: Jason Murdoch [mailto:jmurdoch@dartaero.com]
Sent: Thursday, February 11, 2010 11:32 AM
To: 'David Shepherd'
Subject: FW: QC issues

Hi David,

Any news on this?

Jason Murdoch
Quality Coordinator
 jmurdoch@dartaero.com
DART Aerospace Ltd.
613-632-5200

From: Jason Murdoch [mailto:jmurdoch@dartaero.com]

2/12/10

Sent: February 9, 2010 9:35 AM
To: 'David Shepherd'
Subject: RE: QC issues

Hi David,

We created the w/o to assemble the D212-725-1-901 per the Rev.B drawing (until it goes up to Rev.C to include the Swaging instructions, and Prime per QSI 005 4.2)

I am looking for a written acceptance to go ahead & begin the assembly referencing the instructions that were supplied by Harvey, since this is a critical part. Also, procedure changes will be recorded on the back side of the sheet referencing the e-mail & PAR10-010.

I reviewed the instructions for the sleeve staking & it seems to be clear. However there will have to be some sort of tooling or support necessary to make sure the bearings press in square & center into the part. We can make one here.

Jason Murdoch
Quality Coordinator
jmurdoch@dartaero.com
DART Aerospace Ltd.
613-632-5200

From: Harvey Siemens [mailto:hsiemens@dartaero.com]
Sent: February 8, 2010 12:18 PM
To: 'Jason Murdoch'
Cc: 'David Shepherd'; 'Susane Sheldon'
Subject: RE: QC issues

Jason

Thanks for the quick response – maybe we can some of these thing put to bed once and for all.

D212-725-1-007/-901

Item 1 - We will update the drawing to reference "paint per QSI 005 and it should be yellow

Item 2 - What do we need to be able to give an ARC with the part instead of just a C of C? What did we get with the parts? Can you scan and email it back for review?

Item 3 – We will update the drawing with the swaging information

Item 4 – I believe that ALL aircraft are effected. S/Ns as follows: 30817, 30826, 30866, 30576, 30687, 30931, 30599, 30544

D3689-1 mount

Item 1 – Thanks for getting this on the go I will let Eagle know that the correct parts are on the way.

Scrap Parts

- Do you want the D3689-1 (Rev. B) mounts that are on my desk back or should I just destroy them here.

Regards,

Harvey Siemens
Mechanical Designer

2/12/10

DART Aerospace Ltd.

P: 403-717-0328

F: 403-717-1288

E: hsiemens@dartaero.com

W: www.dartaero.com

M: 1060 McTavish Road NE, Calgary, Alberta, T2E 7G6

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From: Jason Murdoch [mailto:jmurdoch@dartaero.com]

Sent: Monday, February 08, 2010 9:50 AM

To: 'Harvey Siemens'

Cc: David Shepherd; Susane Sheldon

Subject: RE: QC issues

Good morning Harvey:

D212-725-1-007/-901 collective bellcrank

- Where are we at with producing the -901 assembly? WIP right now. What kind of primer finish will these have, yellow / grey as per QSI 005 4.2? See attached. Also, not sure what you are looking for when mentioning on the DART drawing to "PRIME & PAINT PER AIRCRAFT MAINTENANCE MANUAL". It should be referencing QSI005.
- Do we have everything that we need to use the Eagle sub-contracted parts?*YES.....????* But with a C.O.C stating that they were sub-contracted, since there are no official material certs.
- Let me know if you need the production details again i.e. swaging information, tools, etc: This information should be included on the D212-725-1-901 drawing. Linda does have the details, and it is attached to the w/o: the staking info should be initialed off by Mike.P even though there is an e-mail attached with it.
- There is some information out there that original parts need to be replaced. We should probably get some sort of paperwork together to officially notify customers of this replacement requirement. **WIP:** Do you know on your end what A/C would be affected & trace it back to your p/o to DAS?

D3687-1 mount

- Can you send out a Rev. C of this mount to Eagle to replace the one that got with the original engine mount kit that they ordered. Will be shipping a Rev.C today. (it was too late on Friday)

From: Harvey Siemens [mailto:hsiemens@dartaero.com]

Sent: February 5, 2010 3:48 PM

To: 'Jason Murdoch'

Subject: QC issues

Jason

Per our conversation here are the issues that we were talking about.

D212-725-1-007/-901 collective bellcrank

- Where are we at with producing the -901 assembly?
- Do we have everything that we need to use the Eagle sub-contracted parts?
- Let me know if you need the production details again i.e. swaging information, tools, etc
- There is some information out there that original parts need to be replaced. We should probably get some sort of paperwork together to officially notify customers of this replacement requirement.

2/12/10

D3687-1 mount

- Can you send out a Rev. C of this mount to Eagle to replace the one that got with the original engine mount kit that they ordered.

Scrap parts.

- feel free to use me as a repository for scrapping parts that are being replaced, and save the shipping cost of sending scrap parts back to NV4

Have a good week end and we'll talk with you again next week.

Regards,

Harvey Siemens

Mechanical Designer

DART Aerospace Ltd.

P: 403-717-0328

F: 403-717-1288

E: hsiemens@dartaero.com

W: www.dartaero.com

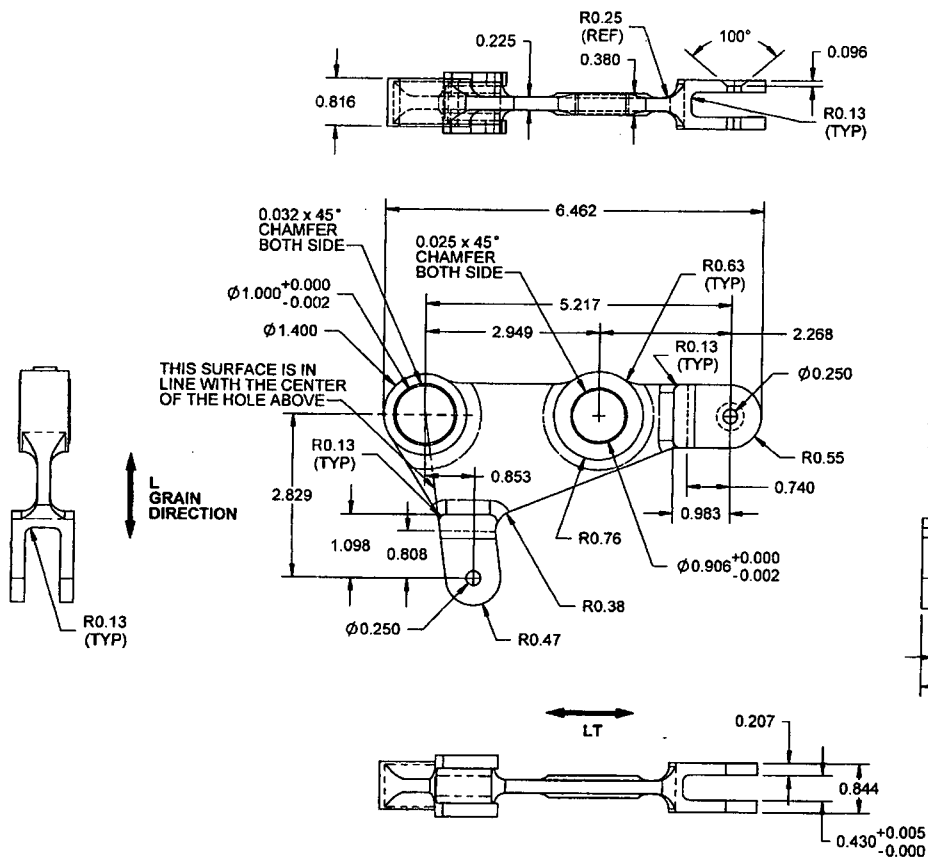
M: 1060 McTavish Road NE, Calgary, Alberta, T2E 7G6

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No virus found in this incoming message.

Checked by AVG - www.avg.com

Version: 8.5.435 / Virus Database: 271.1.1/2681 - Release Date: 02/11/10 07:35:00



D212-725-1-007 COLLECTIVE BELLCRANK

NOTES:

- 1) MATERIAL: ALUMINUM 7075-T7351 (QQ-A-250/12)
- 2) FINISH: ACID ETCH, ALODINE 1200 OR 1201 PER MIL-C-5541 AND/OR PRIME & PAINT PER AIRCRAFT MAINTENANCE MANUAL
- 3) LPI PER ASTM 1417 LEVEL 2
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) ALL DIMENSIONS ARE IN INCHES
- 6) BREAK ALL SHARP EDGES 0.005 TO 0.010
- 7) IDENTIFY WITH DART P/N USING FINE POINT PERMANENT INK MARKER


P/N 120-015-5A SLEEVE (1)
SUITED TO FIT BEARING
P/N MS27647-5 BEARING (1)
PRESS FIT

P/N 120-013-3A SLEEVE (1)
SUITED TO FIT BEARING
P/N MS27643-3 BEARING (1)
PRESS FIT

D212-725-1-007
COLLECTIVE BELLCRANK

D212-725-1-901 COLLECTIVE BELLCRANK ASS'Y

RELEASED
2009-10-28

B	07.05.11	UPDATE MATERIAL & GRAIN DIRECTION	
A	06.12.08	NEW ISSUE	
DESIGN DC	DRAWN BY RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED DS	APPROVED 	DRAWING NO. D212-725-1	REV. B SHEET 4 OF 44
DATE 07.05.11	TITLE 212S DETAIL PARTS		SCALE 1:2
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Ring Staking Procedure:

Ring staking is used on steel and aluminum sleeves. Ring stake is centered on the sleeve and lays over a portion of sleeve to the part and a portion of sleeve to the bearing as shown in Figure 1. Refer to Table 1 for the applicable tools.

1. Ring stake as follows:

CAUTION

EXTREME CARE MUST BE EXERCISED TO AVOID ANY CONTAMINATION OF BEARING DURING ALL PHASES OF HANDLING AND INSTALLATION.

- 1.1 Measure the bore of the part, new bearing and new bearing sleeve to make sure dimensions will provide the interference fit given in Table 2.

- 1.2 Apply coating, as specified in Table 2, to the outside diameter of the new sleeve and to the mating bore in the part.

- 1.3 While coating is wet, press the sleeve into the part with the bearing/sleeve removal and installation tool set. See Figure 1. The sleeve must be equally centered from each side of the part.

- 1.4 Apply coating, as specified in Table 2, to the outside diameter of a new bearing and to the inside diameter of the previously installed sleeve. Avoid excessive application of coating and do not apply to the bearing seals or shields

CAUTION

DURING BEARING INSTALLATION, MAKE SURE YOU APPLY PRESSURE ONLY TO THE OUTER RACE. DO NOT APPLY PRESSURE TO THE INNER RACE AND SPHERICAL BALL OF THE BEARING OR DAMAGE MAY OCCUR.

- 1.5 While coating is wet, press the new bearing into the sleeve with the bearing/sleeve removal and installation tool set. See Figure 1. The bearing must be equally centered from each side of the part.

- 1.6 Select the applicable ring staking tool given in Table 1. Ring stake to obtain required dimensions on both sides of the sleeve as shown in Figure 2.

- 1.7 Clean any excess coating with clean cheesecloth (C-486) moistened with dry-cleaning solvent (C-304).

- 1.8 Make sure there is no movement or looseness of the bearing outer race in the bore of the part.

- 1.9 Examine the bearing for smooth rotation and breakout (misalignment), breakaway or rotational (roll) torque as specified in Table 1.

Table 1 – Staking Tool Set Application

TOOL PART NO.	SLEEVE PART NO.	MANUFACTURER'S BEARING PART NO.	MILITARY STANDARD BEARING PART NO.
T101873-5	120-013-3	DSP3 and DSRP3	MS27643-3
T101873-11	120-015-5	DW5	MS27647-5

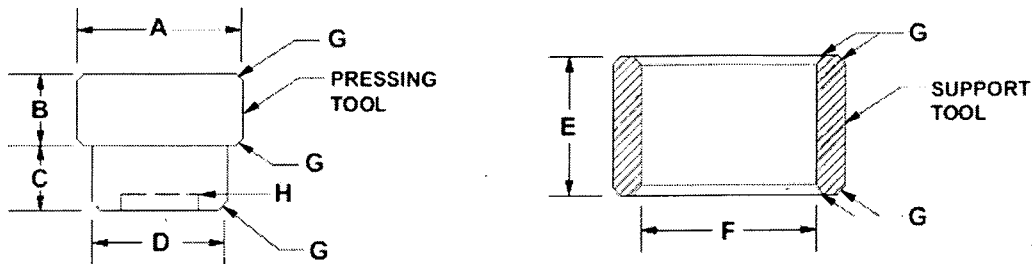
Table 2 – Bearing and Sleeve Replacement Data

COMPONENT	BEARING P/N AND HOLE (BORE) SIZE FOR BEARING	SLEEVE P/N AND HOLE (BORE) SIZE FOR SLEEVE	TYPE OF STAKE AND TOOL NUMBER
D212-725-1-901	MS27647-5 0.8738 TO 0.8743 Inch (22.1945 to 22.2072 mm)	120-015-5A 0.9990 to 1.0000 Inch (25.3746 to 25.4000 mm)	Ring Stake T101873-11
D212-725-1-901	MS27643-3 0.7769 to 0.7774 Inch → (19.7333 to 19.7460 mm)	120-013-3A 0.9060 to 0.90635 Inch (23.0124 to 23.0251 mm)	Ring Stake T101873-5

Notes:

1 – Install bearing/bearing sleeve with unreduced zinc chromate primer (Loctite 609 also acceptable) on faying surfaces.

2 – Stake on both sides of sleeve



MATERIAL: ANY ROUND ALLOY STOCK

NO.	REF LTR	DIMENSIONS
1	A	Slightly smaller than sleeve outside diameter.
2	B	Two times the bearing length.
3	C	Two times the bearing width.
4	D	Slightly smaller than bearing inside diameter.
5	E	Slightly longer than bearing or sleeve height/length.
6	F	Slightly larger than bearing or sleeve O.D.
7	G	Chamfer 0.025 inch (0.635 mm) by 45°.
8	H	Undercut 0.4 inch (10.16 mm) to provide clearance for shoulder diameter bearing inner ring.

Figure 1 – Bearing/Sleeve Removal and Installation Work aids

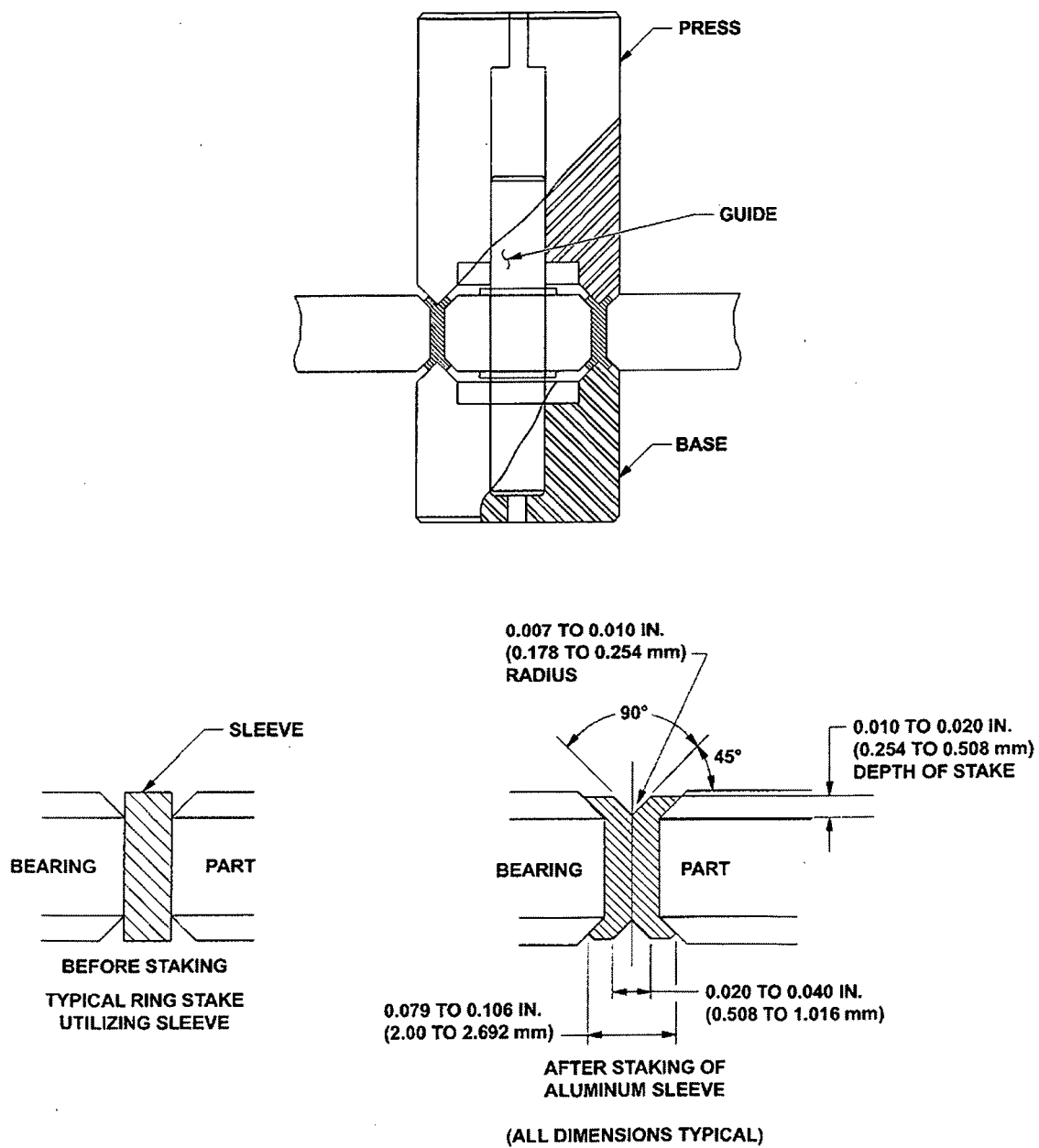


Figure 2 – Typical Ring Stake